TOSS3 Migration + Virtual Office Hour

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NASA Advanced Supercomputing Division

TOSS3 Migration + Virtual Office Hour
(TOSS3 = RHEL-based Tri-Lab Operating System Stack)

- Part 1: TOSS3 Migration Why?
  - To better align with open-source development activities
  - Streamline and reduce ongoing costs
  - Facilitate interagency collaborative efforts in systems and application software
  - Timeline of TOSS3 Migration
    - Aug 10, 2021: General Announcement of planned migration to TOSS3
    - Aug 20, 2021: Select early user testing
    - Sep 17, 2021: Testing of TOSS3 open to all users
    - Dec 20, 2021: TOSS3 becomes default OS for new job submissions
    - Jan 25, 2022: SLES12 OS no longer available
  - Best Practices
    - Use new module files
    - If old executable won't run, recompile using new module files
    - How to deal with missing libraries or incompatible libraries
      version `GLIBC_2.18' not found (required by ..../libstdc++.so.6)
  - Pain points
    - Long stalls when job starts up
    - MPI_LAUNCH_TIMEOUT errors
- Part 2: Virtual Office Hour

Best Practices

- Use newer modules:
  - comp-intel/2018.3.222 or comp-intel/2020.4.304
  - mpi-hpe/mpt or mpi-hpe/mpt.2.25
- Use “module avail” for a list of all supported modules
- If the library is missing, check in pkgsrc
  - for example: module help pkgsrc/2021Q2
- If libstdc++.so.6 library version incompatibility is found, the typical messages are:

  XXX: /lib64/libc.so.6: version `GLIBC_2.18' not found (required by ...../libstdc++.so.6)

  or

  /lib64/libstdc++.so.6: version `CXXABI_1.3.8' not found
  /lib64/libstdc++.so.6: version `GLIBCXX_3.4.20' not found

  Solution: module load gcc
  * for the first case, the new libstdc++.so.6 from gcc only requires GLIBC up to 2.17
  * for the second case, the new libstdc++.so.6 provides updated versions of CXXABI and GLIBCXX

Pain Points

- Long stalls when job starts up
  - job enters ‘R’ state but elapsed time is still ‘--’
  - most likely due to nodes provisioning (i.e., rebooting into requested OS)
  - run: ssh pbspl1 tracejob jobid (to see the why the job hasn’t started)
  - should abate once all nodes are booted into TOSS3
- Typical MPI_LAUNCH_TIMEOUT message at mpiexec start-up:

  MPT: Launcher network accept (MPI_LAUNCH_TIMEOUT) timed out
  MPT: Launcher on r423i0n6 failed to receive connection(s) from: r431i1n12,...
  MPT ERROR: could not launch executable

  Workarounds:
  - increase setting of MPI_LAUNCH_TIMEOUT to 40 (seconds) Default: 20 seconds
  - #PBS -l site=needed=/home5+/nobackupp11+/nobackupp16
  - /u/scicon/tools/bin/several_tries mpiexec -np ...

Questions?

Suggestions for future webinar topics are welcome